AB/2133

PATENT
Atty. Dkt. No. Agre/121762

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: Azadet, et al.	§	
Serial No.: 09/776,175	§	Group Art Unit: 2133
Confirmation No.: 2199	§	Examiner: Esaw T. Abraham
Filed: February 02, 2001	§	
For: **SIMPLE LINK PROTOCOL PROVIDING LOW OVERHEAD CODING FOR LAN SERIAL AND WDM SOLUTIONS**	§	

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
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37 CFR 1.8
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11-22-03 (Date) Signature C. Wilson

Dear Sir:

APPEAL BRIEF

Appellant submits this Appeal Brief to the Board of Patent Appeals and Interferences on appeal from the decision of the Examiner of Group Art Unit 2133 dated May 28, 2004, finally rejecting claims 1-26. This Appeal Brief accompanies Appellant's request for a one (1) month Extension of Time under 37 CFR 1.136(a). Please charge the fee for filing this Appeal Brief and any extensions of time to Deposit Account No. 20-0782.

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Real Party in Interest

The real party in interest is Agere Systems, Inc.

Related Appeals and Interferences

Appellant asserts that no other appeals or interferences are known to the Appellant, the Appellant's legal representative, or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

Status of Claims

Claims 1-26 were originally presented in the application. Claims 1-4, 7-8 and 20 stand finally rejected as being anticipated by Treadaway et al. (U.S. Patent 6,665,285, hereinafter Treadaway), claims 5, 6, 11, 12, 14-19 and 23 stand finally rejected by Treadaway in view of Rouse (U.S. Patent 5,260,933), and claims 9, 10, 13 and 24-26 stand finally rejected by Treadaway as discussed below. In addition, claims 21 and 22 are objected to as being dependent upon a rejected base claim but would be allowable if written in independent form including all of the limitations of the base claims and any intervening claims. The rejection of claims 1-26 based on the cited references is appealed. The pending claims are shown in the attached Appendix.

Status of Amendments

A first response was filed on March 17, 2004 to overcome a First Office Action dated December 31, 2003 (Paper No. 6). In the First Office Action, the Examiner rejected claim 1 under 35 U.S.C. § 101 and claims 1 and 15 under 35 U.S.C. § 112. The Examiner further rejected claims 1-4, 7-8 and 20 under 35 U.S.C. § 102(e) and rejected claims 5, 6, 9-11, 12-19 and 23-26 under 35 U.S.C. § 103(a). In the response filed on March 17, 2004, the Appellant amended claims 1-9 and 15 to more clearly define the Appellant's invention and to correct for informalities pointed out by the Examiner and not in response to prior art. The Appellant further set forth arguments traversing the rejections issued by the Examiner.

A second response was filed on June 17, 2004 in response to a Second (Final) Office Action dated May 28, 2004. In the Final Office Action, the Examiner noted that claims 1-26 were pending in the application and the Examiner reiterated his rejection of claims 1-4, 7-8 and 20 under 35 U.S.C. § 102(e) and rejected claims 5, 6, 9-11, 12-19 and 23-26 under 35 U.S.C. § 103(a) as recited in the First Office Action. The Examiner further noted that the Examiner accepted the amended claims, which were corrected by the Appellant in response to claim informalities. In the response filed on June 17, 2004 the Appellant amended claim 15 to more clearly define the invention of the Appellant and not in response to prior art. No other claims were amended, but the Appellant again set forth arguments traversing the rejections issued by the Examiner.

The Examiner responded to the Appellant's response of June 17, 2004 with an Advisory Action dated July 28, 2004. In the Advisory Action, the Examiner stated that the Appellant's response to the Final Office Action was entered however the Examiner included an explanation of how the new or amended claims would be rejected. More specifically, the Advisory Action reiterated the Examiner's rejections of the Appellant's claims enumerated in the Final Office Action. The claims on appeal are those of the Final Office Action response filed June 17, 2004.

Summary of Invention

The invention of the Appellant comprises a method and protocol that utilizes the so-called inter-packet gap (IPG) to store a relatively long termination flag (T-FLAG) and a relatively short sequence identification nonce. The termination flag is used to indicate the beginning of a control portion of a data stream, where the data stream is divided into alternating control and data portions, each of the data portions comprising a packet or frame. Thus, the termination flag also indicates the end of a data frame. The sequence identification nonce comprises a single-use token computed according to a unique function based upon a data payload temporally adjacent the termination flag (e.g., a cyclical redundancy check (CRC), count of words or double words, etc. based upon a temporally preceding data packet or frame). More generally, in the invention of the Appellant, synchronization data indicative of a data frame delineation point is inserted within an inter-packet gap (IPG) proximate a data frame during transmission. Optionally, a cyclical redundancy check (CRC) length indicative data, pointer data, and other data is inserted within the IPG to further insure appropriate delineation of data frames within a data stream.

One embodiment of the invention achieves zero-overhead frame delineation by embedding a long (e.g., 80-bit) termination flag (T-FLAG) and, optionally, a short (e.g., 16-bit) sequence identification nonce (i.e., a single-use token) in the IPG. Any unique function of the data payload could be used to compute the nonce, such as a CRC-16 or data payload length parameter. The length of the payload may be expressed, for example, as the number of double-words between a start-of-frame-delineation (SFD) and an end-of-frame-delineation (EFD) character. When a receiver finds a T-FLAG in the incoming stream, the next two bytes must match the count since the last SFD, otherwise the frame is dropped.

Since the IPG is already required, the frame delineation scheme adds no additional overhead. The scheme of the Appellant's invention is robust in the presence of both burst and random errors.

As suggested in MPEP 1206, the Appellant now reads two of the broadest appealed claims, specifically claim 1 and claim 10, on the specification and on the

drawings. It should be understood, however, that the appealed claims may read on other portions of the specification or other figures that are not listed below.

Firstly, and with reference to FIG. 1 of the Appellant's specification, one embodiment of the Appellant's invention operates within the physical coding sublayer (PCS) 175. The physical coding sublayer is responsible for frame delineation, frame formatting and line coding. The protocol of the invention provides a mechanism for delineating frames or data payloads, formatting inter-frame control space according to a synchronization pattern and, optionally, one or more data patterns associated with a preceding data region.

The Appellent's invention is directed to simplifying the task of frame delineation. Frame delineation is a task of finding transition points between a data frame and a subsequent control frame, and between a control frame and a subsequent data frame. A transmitting PCS may associate each byte in an incoming data stream with either a data frame payload (datagram) or a "control frame" identifier. A start of frame delimiter (SFD), end of frame delimiter (EFD) and idle character are examples of the various control characters employed for this task.

FIG. 2 of the Appellant's Specification depicts a data structure according to the Appellant's invention. Specifically, FIG. 2 depicts a packetized data stream 200 comprising alternating data (D) and control (C) portions denoted as D_1, C_1, D_2, C_2, and so on up to D_N, C_N. The data portion D of the packetized data stream may comprise any form of data. Since the present invention is most applicable to packetized data streams composed of variable length data packets, it will be assumed that each data portion D of the packetized data stream 200 comprises a payload portion of a variable length packet.

First control portion C_1 comprises a plurality of control related data bytes. Specifically, an end-of-frame (EFD) delineation character is followed by a plurality of idle (IDLE) characters and a start-of-frame (SFD) delineation character. The EFD control character in the first control portion C_1 defines the end of first data portion D_1, while the SFD control character defines the initial portion of second data portion D_2.

Second control portion C_2 comprises an EFD character followed by a plurality of idle characters and an SFD character. As previously discussed, the inter-packet gap (IPG) feature that has been carried forward from the earlier versions of the Ethernet comprises a minimum 12 byte gap between the end of one data packet and the start of another data packet. That is, the IPG provides for at least 12 idle characters between the EFD and the SFD of a control portion. The invention utilizes the IPG by embedding a long (e.g., 80-bit) termination flag (T-FLAG) within the IPG to operate as a synchronization pattern which will identify a control portion of the packetized data stream 200. As noted in FIG. 2, the 10 idle characters immediately following the EFD character in control portion C_2 are replaced by ten flag data characters denoted as FD_1 through FD_{10}. In this manner, an 80-bit synchronization pattern is established. It is noted that the synchronization pattern may comprise more or less bytes, though it is important to insure that the number of bytes used for the synchronization pattern does not exceed the IPG implemented in a system processing the packetized data stream 200. As the number of bytes allocable to the synchronization pattern increases, the possibility of such a synchronization pattern occurring within a data portion D is greatly reduced.

In the invention of the Appellant, a sequence identification nonce (i.e., a single-use token) may also be included within the IPG. The nonce is computed as a unique function based upon the data payload. In FIG. 2, the nonce comprises a 16-bit cyclical redundancy check (CRC-16). In one embodiment, the nonce comprises an expression related to the length of the preceding data portion or data payload. This length may be expressed as a number of words or double-words between the SFD and EFD characters. In this manner, a receiver identifying a T-FLAG in an incoming stream may also match the number of single (or double) bytes in the immediately received data payload to the count stored as a nonce. In the event of a mismatch, the data packet is dropped.

With reference to FIG. 3, a block diagram of a data structure according to an embodiment of the invention is depicted. Specifically, FIG. 3 depicts the packetized data stream 300 comprising a first data portion D_X, a first control portion

$C_{X,,}$ a second data portion D_Y, and a second control portion C_Y. It is noted that the packetized data stream 300 continues with alternating data and control portions (not shown). FIG. 3 illustrates the use of a length field (LEN) indicative of the number of double words in a preceding data portion. That is, the number of double words within the data frame D_X is calculated and stored within a two byte length field within the IPG. The two byte length field preferably follows the multiple byte T-FLAG fields within the IPG. The length field LEN may be inserted prior to or following a CRC field, such as shown in FIG. 2. It should be noted that only the T-FLAG field within the IPG is required. The length field and/or CR field are optional fields useful in providing additional information to a receiver such that errors may be avoided.

With reference to FIG. 4, the operation of the transmitter is summarized as follows: when a transmit output queue is empty, the transmitter inserts IDLE characters into the output stream provided to the PMD interface. When new data to be transmitted is received via the MAC interface, the transmitter outputs a start of frame delineator (SFD) to the PMD interface. The data received via the MAC interface is then scrambled and output to the PMD interface as a new data frame. When the end of the payload comprising the data frame is reached, the scrambler is frozen and the transmitter outputs an end of frame delineator (EFD) to the PMD interface, followed by a T-FLAG and, optionally, one or more nonces. The transmitter also monitors the output of the scrambler, and if a T-FLAG is generated by the scrambler (which will result in a frame delineation error at a receiver), the current transmission is immediately terminated and an error flag (E-FLAG) is transmitted, thereby signaling a receiver to abort reception of the data frame. At this point, higher level protocols will likely retransmit the packet. Since the scrambler will be in a different state upon retransmission, the odds of generating another T-FLAG are negligible. Further, the odds of generating such a T-FLAG may be reduced by increasing the number of bytes allocated to a T-FLAG.

FIG. 5 depicts a flow diagram of a packet processing method of the Appellant's invention. The method 500 of FIG. 5 is entered at step 510 when a data packet to be transmitted is received. At step 520, termination flag data is

inserted within the respective IPG. At optional step 530, a first type of nonce is generated and utilized. Specifically, at step 532, the number of double words in the received packet is calculated and, at step 534, the double word count is inserted within the respective IPG. At optional step 540, a second type of nonce is generated and utilized. Specifically, at step 542, a cyclical redundancy check (CRC) of the received packet is calculated and, at step 544, the CRC is inserted within the respective IPG. At step 550, the data packet is scrambled. The method 500 is then repeated for the next data packet.

Finally and referring to FIG. 6, a state initially begins in a HUNT state 610. When a T-FLAG is detected 611 in an input data stream, the receiver enters 611 a PRESYNC state 620 where a nonce data structure is used. Otherwise, the receiver enters a CONTROL state 641. In the PRESYNC state 620, a nonce counter is reset if the above-described data indicative nonce is used. If such a nonce is not used, the receiver immediately proceeds 621 to a CONTROL state 640. Upon receiving a T-FLAG and (if used) a valid nonce, the receiver proceeds 621 to the CONTROL state 640, where it remains until a start of frame delineator (SFD) is found, at which point the receiver proceeds 642 to a DATA state 630. The receiver remains in the DATA state 630 until either a valid termination is found, or until, for example, twice the maximum byte count of one Ethernet packet (2 x 1,518 bytes) is exceeded . Upon receipt of a valid termination, the receiver proceeds 631 to the control state 640. Upon detecting a byte count exceeding a maximum byte count, the receiver proceeds 632 to the HUNT state. In one embodiment, a packet is accepted only when (1) an exact match of the start of packet (SOP) byte followed by payload (2) and by an exact match of the 10-byte T-FLAG and (3) the 2-byte length field is found.

For the convenience of the Board of Patent Appeals and Interferences, Appellant's independent claims 1, 10, 15 and 20 are presented below in claim format with elements read on the drawings and appropriate citations to at least one portion of the specification for each element of the appealed claims (with reference numerals added).

Claim 1 positively recites (with reference numerals added, where applicable):

1. A method of data communication, comprising:
transmitting a plurality of data frames temporally separated by respective inter-packet gaps (IPGs) (530, 540, 550), each IPG having positioned within it at least a synchronization pattern suitable for delineating a respective data frame. (See Appellant's specification, page 6, line 21 through page 7, line 12; and page 10, lines 4-19; and page 11, lines 19-24).

Claim 10 positively recites (with reference numerals added, where applicable): 10.

10. A protocol suitable for delineating data frames within a communications link, said protocol comprising a plurality of layers including a physical coding sublayer (PCS), said PCS processing a data to be transmitted as a sequence of data frames, said protocol comprising:
receiving a data stream to be transmitted as a sequence of data frames;
inserting, into a temporal region following each transmitted data frame, a synchronization pattern suitable for delineating said data frame. (See Appellant's specification, page 8, lines 5-13).

Claim 15 positively recites (with reference numerals added, where applicable):

15. A method for transmitting data, comprising:
transmitting, to a physical media dependent (PMD) layer, a sequence of idle control characters;
transmitting, to said PMD layer, a start of frame delineator (SFD) upon detecting the presence of data to be transmitted;
transmitting said received data until an entire data frame has been transmitted;
transmitting, upon the transmission of said entire data frame, an end of frame delineator (EFD) and a termination flag (T-FLAG), said T-FLAG comprising a respective relatively long synchronization pattern suitable for delineating said data frame.. (See Appellant's specification, page 10, lines 4-24).

Claim 20 positively recites (with reference numerals added, where applicable):

20. A method for receiving data, comprising:
determining data frame delineation points within a received data stream by detecting the presence of a synchronization pattern within said

data stream, said synchronization pattern being positioned within inter-packet gaps (IPGs); and

forming data frames for subsequent processing by utilizing said determined delineation points. (See Appellant's specification, Abstract, page 24, lines 2-6).

ISSUES

1. Whether claims 1-4, 7-8 and 20 are Patentable under 35 U.S.C. §102(e) over Treadaway et al. (U.S. Patent 6,665,285, hereinafter "Treadaway").

2. Whether claims 5, 6, 11, 12, 14-19 and 23 are Patentable under 35 U.S.C. §103(a) over Treadaway in view of Rouse (U.S. Patent 5,260,933).

3. Whether claims 9, 10, 13 and 24-26 are Patentable under 35 U.S.C. §103(a) over Treadaway.

Grouping of Claims

Pending claims 1-4, 7-8 and 20; 5, 6, 11, 12, 14-19 and 23; and 9, 10, 13 and 24-26 have been grouped together by the Examiner in their rejection. Appellant urges that each of the rejected claims stands on its own recitation, the claims being considered to be separately patentable for the reasons set forth in more detail *infra*.

ARGUMENT

I. THE EXAMINER ERRED IN REJECTING CLAIMS 1-4, 7-8 AND 20 UNDER 35 U.S.C. § 102(e) BECAUSE THE CITED REFERENCE FAILS TO TEACH, SHOW OR SUGGEST AT LEAST A SYNCHRONIZATION PATTERN SUITABLE FOR DELINEATING A RESPECTIVE DATA FRAME POSITIONED WITHIN THE INTER-PACKET GAPS (IPGs) OF A PLURALITY OF TRANSMITTED DATA FRAMES.

A. 35 U.S.C. § 102 - Claim 1.

The Examiner has rejected claims 1-4, 7, 8 and 20 under 35 U.S.C. § 102(e) in a Final Office Action dated May 28, 2004 as being anticipated by Treadaway et al. (U.S. Patent No. 6,665,285, hereinafter "Treadaway"). The rejection is respectfully traversed.

Regarding claim 1, the Examiner alleges that Treadaway teaches all of the aspects of the Appellant's invention. The Appellant respectfully disagrees.

"Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim" (Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984)(citing Connell v. Sears, Roebuck & Co., 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983)) (emphasis added). The Appellant respectfully submits that Treadaway fails to disclose each and every element of the claimed invention, as arranged in at least the Appellant's claim 1, which specifically recites:

> "A method of data communication, comprising:
> transmitting a plurality of data frames temporally separated by respective inter-packet gaps (IPGs), **each IPG having positioned within it at least a synchronization pattern suitable for delineating a respective data frame**." (emphasis added).

In the final Office Action, the Examiner alleges that features upon which the Applicant relies on in response to the First Office Action, specifically, "the termination flag indicates the beginning of a control portion of a data stream where the data is divided into alternating control and data portions" is not recited in the rejected claims. The Applicant strongly disagrees.

The Applicant respectfully reminds the Examiner that inventors may act as their own lexicographers and use the specification to attribute specific meanings to terms in a patent claim. Bell Atlantic Network Services, Inc. v. Covad Communications Group, Inc., 262 Fed.3d 1258 1268(Fed. Cir. 2001). As such, claims must be read in view of the patent specification. Id. The Applicant further submits that for claims construction purposes, the description may act as a sort of dictionary, which explains the invention and may define terms used in the claims. Markman v. Westview Instruments, Inc., 52 F.3d 967, 979 (Fed. Cir. 1995). As such, the Applicant respectfully submits that features upon which the Applicant relies on in response to the First Office Action, specifically "the termination flag indicates the beginning of a control portion of a data stream where the data is divided into alternating control and data portions" is in fact recited in the rejected claims.

More specifically, with respect to the synchronization pattern, the Applicant specifically recites:

> "The invention utilizes the IPG by embedding a long (e.g., 80-bit) termination flag (T-FLAG) within the IPG to operate as a synchronization pattern which will identify a control portion of the packetized data stream 200. As noted in FIG. 2, the 10 idle characters immediately following the EFD character in control portion C_2 are replaced by ten flag data characters denoted as FD_1 through FD_{10}. In this manner, an 80-bit synchronization pattern is established. It is noted that the synchronization pattern may comprise more or less bytes, though it is important to insure that the number of bytes used for the synchronization pattern does not exceed the IPG implemented in a system processing the packetized data stream 200." (See Applicant's Specification, page 6, line 21 through page 7, line 1).

From at least the portion of the Applicant's Specification recited above, it is clearly evident that the Applicant in fact teaches and claims a termination flag in at least claim 1. More specifically, the Applicant teaches and claims the use of a synchronization pattern in an inter-packet gap used to delineate a respective data frame. The Applicant specifically teaches that in one embodiment of the invention, the synchronization pattern may be a termination flag. As such, it is very clear that the Applicant in fact teaches and claims using a termination flag as a synchronization pattern.

In addition, the Applicant absolutely also teaches and claims "the termination flag indicates the beginning of a control portion of a data stream where the data is divided into alternating control and data portions" as alleged by the Examiner as not being in the claims. More specifically, the Applicant in the Specification specifically recites:

> "One embodiment of the invention operates within the physical coding sublayer (PCS) 175. The physical coding sublayer is responsible for frame delineation, frame formatting and line coding. The inventor protocol provides a mechanism for delineating frames or data payloads, formatting inter-frame control space according to a synchronization pattern and, optionally, one or more data patterns associated with a preceding data region.
>
> The present invention is directed to simplifying the task of frame delineation. Frame delineation is a task of finding transition points between a data frame and a subsequent control frame, and between a control frame and a subsequent data frame. A transmitting PCS may associate each byte in an incoming data stream with either a data frame payload (datagram) or a "control frame" identifier. A start of frame delimiter (SFD), end of frame delimiter (EFD) and idle character are examples of the various control characters employed for this task." (See Applicant's Specification, page 5, line 18, through page 6, line 2).
>
> "The present invention provides a data structure, method, apparatus and protocol that utilizes the so-called inter-packet gap (IPG) to store a relatively long termination flag (T-FLAG) and a relatively short sequence identification nonce. The termination flag is used to indicate the beginning of a control portion of a data stream, where the data stream is divided into alternating control and data portions, each of the data portions comprising a packet or frame. Thus, the termination flag also indicates the end of a data frame." (See Applicant's Specification, Summary).

As such, because the Applicant in the Specification teaches that frame delineation includes at least of finding transition points between a data frame and a subsequent control frame, and between a control frame and a subsequent data frame, the Applicant respectfully submits that claim 1, in claiming that "a synchronization pattern suitable for delineating a respective data frame" in fact claims at least "the termination flag indicates the beginning of a control portion of a data stream where the data is divided into alternating control and data portions".

Even further, in accordance with at least the Applicant's claim 1 recited above, it is evident that the Applicant's invention is directed at least in part to a method for data communication where respective synchronization patterns are positioned within inter-packet gaps between the data portions of communication signals for delineating a respective data frame. The presence and configuration of the inserted synchronization patterns are examined by a respective receiver to delineate respective data frames via the verification that an appropriate synchronization pattern has been received. In support of the claimed invention at least with respect to the Applicant's claim 1, the Applicant in the Specification specifically recites:

> "At step 520, termination flag data is inserted with the respective IPG. That is, at step 520A, a 9 to 12 byte (preferably) termination flag (T-FLAG) or synchronization pattern is appended to the data packet in a manner temporally occupying at least a portion of the 12 byte minimum inter-packet gap (IPG) previously discussed. The T-FLAG comprises a unique bit pattern that will be detected by a receiver such that packet delineation may be determined." (See Applicant's Specification, page 11, lines 19-24).
>
> In one embodiment, a packet is accepted only when (1) an exact match of the start of packet (SOP) byte followed by payload (2) and by an exact match of the 10-byte T-FLAG and (3) the 2-byte length field is found. Either an early or later false match of T-FLAG and length field leads to false acceptance." (See Applicant's Specification, page 13, lines 21-14).

Again, it is very clear from at least the portion of the Applicant's Specification recited above, that the Applicant's invention of claim 1, is directed, at least in part,

to a method of transmitting a synchronization pattern within data inter-packet gaps such that a receiver may determine packet delineation of respective data frames. Because the Applicant in the Specification teaches a specific meaning to the word "delineation", more specifically that a receiver looks for an exact match of a respective T-FLAG (synchronization pattern) for finding transition points between a data frame and a subsequent control frame, and between a control frame and a subsequent data frame, and because an inventor is his own lexicographer, the Applicant respectfully submits that the Applicant in at least claim 1, in fact specifically claims that respective synchronization patterns are transmitted in respective inter-packet gaps (IPGs), where the synchronization pattern is suitable for delineation of a respective data frame by a receiver in that the receiver looks for an exact match of a respective T-FLAG (synchronization pattern) for finding transition points between a data frame subsequent control frame, and between a control frame and a subsequent data frame.

In contrast to the Applicant's invention, there is absolutely no teaching, suggestion or disclosure in Treadaway for "transmitting a plurality of data frames temporally separated by respective inter-packet gaps (IPGs), each IPG having positioned within it at least a synchronization pattern suitable for delineating a respective data frame" as taught in the Applicant's Specification and claimed by at least the Applicant's claim 1. More specifically, Treadaway fails to teach, suggest or disclose each and every element of the Applicant's claims arranged as in the claims at least with respect to the Applicant's claim 2. Instead, Treadaway teaches a terminal for a wireless link in a metropolitan area network which includes a packet buffer for storing the data packets prior to storing the data packets in the rate buffer. A network switch can be a layer-two switch. The network switch can store the data packets in the packet buffer in response to a level of space available in the rate buffer, in response to rain fade in the wireless link, in response to interference in the wireless link, or in response to a detected bit error rate for communication via the wireless link. The terminal can include an extender device coupled to the broadcast device for receiving the data packets from the computer

network and for providing the data packets to the broadcast device. (See Treadaway, Abstract). In support of its invention, Treadaway specifically recites:

> "The rate control logic 250 detects each 100BASE-T Ethernet data packet received from the transceiver 212. In the preferred embodiment, the rate control block 250 then checks each such 100BASE-T Ethernet data packet for errors utilizing the frame check sequence (FCS) appended to each 100BASE-T Ethernet packet and strips each 100BASE-T Ethernet data packet of its preamble and start-of-frame delimiter (the frame-check sequence FCS for each 100BASE-T Ethernet packet is preferably retained). The rate control logic 250 also converts each Ethernet data packet from nibbles to bytes.
>
> The rate control logic 250 calculates the length of each detected 100BASE-T Ethernet data packet. The rate control logic 250 also determines whether the packet is too long, too short (a runt packet) or is misaligned.
>
> The rate control logic 250 then temporarily stores the packets in rate buffers 252. In the preferred embodiment, the bytes for each packet are clocked into the rate buffers 252 according a clock signal recovered from the data. The rate buffers 252 preferably include two first-in, first-out (FIFO) buffers having 16 K entries, one for packets being transmitted and one for packets being received. The FIFO buffers each preferably provides sufficient storage for each entry so that additional information can be stored in the rate buffers 252 along with the byte of data. Such additional information preferably includes the data valid bit for each nibble and an indication of whether the nibble is payload data or overhead for the 100Base-T Ethernet packets. For example, the overhead can include interpacket gaps codes (e.g. one byte/octet of all zeros with associated data valid bits de-asserted), and start-of-packet codes. Assuming inter-packet gap codes are stored, preferably only one inter-packet gap code, representative of the minimum required inter-packet gap (e.g. of 0.96 μ.s), is stored in the rate buffers 252.
>
> At optional step 530, a first type of nonce is generated and utilized. Specifically, at step 532, the number of double words in the received packet is calculated and, at step 534, the double word count is inserted within the respective IPG." (See Treadaway, col. 11, lines 11-51).

As evident from at least the portion of Treadaway recited above, it is clear that the invention of Treadaway is directed to an Ethernet switch in a terminal including a MAC where the MAC includes a rate control logic device. The rate control logic

device of Treadaway detects each data packet received from a transceiver and calculates the length of each data packet. The rate control logic device then temporarily stores the packets in rate buffers. Along with the data packet, additional information regarding the data packet is stored. For example, overhead can include interpacket gaps codes. The inter-packet gap codes taught in Treadaway represent the minimum required inter-packet gaps for the transmission of the data packets. Treadaway specifically teaches that during periods when a complete packet is not available from the rate buffers, then an inter-packet gap code is substituted by the packet synch/de-synch block. (See Treadaway, col. 10, line 58 to col. 11, line 67). There is however, absolutely no teaching, suggestion or disclosure in Treadaway for "transmitting a plurality of data frames temporally separated by respective inter-packet gaps (IPGs), each IPG having positioned within it at least a synchronization pattern suitable for delineating a respective data frame" as taught by the applicant's Specification and claimed in at least the Applicant's claim 1. In fact, Treadaway is completely silent about interpacket gaps between transmitted data signals.

More specifically, the Applicant specifically teaches that an "inter-packet gap comprises a pause between back-to-back transmissions." (See Applicant's Specification, page 4, lines 17-18). Treadaway makes absolutely no reference at all to inter-packet gaps between back-to-back data transmissions. Even further, Treadaway does not teach or suggest the transmission of a synchronization pattern in inter-packet gaps of data packets such that the unique bit pattern will be detected by a receiver such that packet delineation may be determined as taught in the Applicant's Specification and claimed by at least the Applicant's claim 1.

Instead in Treadaway, a data packet is stored in a rate buffer, and along with the data packet, information regarding a minimum required inter-packet gap for the data packet may also be stored in a packet header. In fact, in the Final Office Action, the Examiner stated that Treadaway teaches a reformed data frame in FIG. 5, element 300, which is loaded to rate buffers depicted in FIG. 4, element 252. By the Examiner's own admission, the teachings for Treadaway teach away from the invention of the Applicant. Specifically, and as conceded by the

Examiner, Treadaway teaches reforming a data frame to include information such as packet length and inter-packet gap codes to separate each data packet. (See Treadaway, col. 16, lines 45-47). This is in direct contrast to the invention of the Applicant which teaches and claims "transmitting a plurality of data frames temporally separated by respective inter-packet gaps (IPGs), each IPG having positioned within it at least a synchronization pattern suitable for delineating a respective data frame", wherein there is no need to reform a data frame as taught by Treadaway and as conceded by the Examiner. In fact, the Applicant specifically recites that the invention of the Applicant has distinct advantages over prior art teachings such as Treadaway. That is, in the Specification, the Applicant specifically recites:

> "The described simple data link (SDL) protocol provides for the framing of asynchronous protocol data units (PDUs) using a length indicator and pointer scheme whereby a pointer in the header of one packet or data frame is used to identify the start of a next packet or data frame. The SDL utilizes a length indicator field and a header cyclic redundancy check (CRC) to delineate frames. Unfortunately, in the case where packet length information is not available, an entire packet must be stored, thereby increasing latency. This may not be acceptable in some applications, such as "cut-through" packet switching." (See Applicant's Background, page 2, lines 16-23).
>
> "Since the IPG is already required, the frame delineation scheme adds no additional overhead. It will be shown that such a scheme is robust in the presence of both burst and random errors." (See Applicant's Summary, page 3, lines 18-20).

As clearly evident from at least the portions of the Applicant's disclosure presented above, the Applicant's invention has a clear advantage over the invention of Treadaway as there is no need in the Applicant's invention to reform a data frame as taught in Treadaway and as conceded by the Examiner. For at least the reasons stated above, the Applicant respectfully submits that there is absolutely no teaching, suggestion, disclosure or even mention of "transmitting a plurality of data frames temporally separated by respective inter-packet gaps (IPGs)" wherein "each IPG having positioned within it at least a synchronization pattern suitable for delineating a respective data frame" as taught in the Applicant's Specification and

claimed by at lest the Applicant's claim 1. In fact there is absolutely no teaching, suggestion or disclosure in Treadaway of inserting absolutely anything into interpackets gaps between transmitted data frames. The only mention of inter-packet gap in Treadaway is for the teaching of an inter-packet gap code that is inserted in the header of a reformed data frame to indicate a minimum packet gap required between data frames.

Even further the Applicant submits that there is absolutely no teaching, suggestion or disclosure in Treadaway for a synchronization pattern as taught in the Applicant's specification and claimed by at least the Applicant's claim 1. As depicted above, the Applicant teaches a specific and unique synchronization pattern that is positioned in a respective inter-packet gap which is subsequently identified and examined by a receiver for the delineation of a respective data frame. Instead in contrast to the invention of the Applicant, Treadaway specifically recites:

> "Upon retrieving each packet from the rate buffers, the packet synch/de-synch block 256 adds a synch pattern in field 302 and a length value in field 304 to the packet. The length value is retrieved from the length and status buffer 254.
>
> The packet synch/de-synch block 256 retrieves the stored 100BASE-T Ethernet data packets from the rate buffers 252 at an appropriate rate which depends, in part, upon the data transmission rate utilized for sending data over the wireless link 102. In the preferred embodiment, removal of data from the rate buffers 252 for an Ethernet packet is not initiated until the packet has been completely stored." (See Treadaway, col. 11, lines 58-64).
>
> In the preferred embodiment, finite state machines control the synch/de-synch block 256 so as to enable the retrieval of 100BASE-T Ethernet packets from the rate buffers 252 along with the length and status of each, at a appropriate frequency for forming radio frames 350 (FIG. 6). (See Treadaway, col. 12, lines 8-19).

As evident from at least the portions of Treadaway presented above, Treadaway teaches adding a synch pattern in a reformed data frame for enabling the retrieval of the stored 100Base-T Ethernet data packets from the rate buffers 252 at an appropriate rate which depends, in part, upon the data transmission rate utilized for sending data over the wireless link. However there is absolutely no teaching,

suggestion or disclosure in Treadaway fro a "synchronization pattern suitable for delineating a respective data frame" as taught in the Applicant's Specification and claimed by at least the Applicant's claim 1.

For at least the reasons stated above, the Applicant strongly and respectfully submits that Treadaway absolutely fails to teach, suggest or disclosure each and every element of the Applicant's claimed invention arranged as in the Applicant's claims as required for anticipation of the Applicant's claims.

Therefore, the Appellant submits that independent claim 1 is not anticipated by the teachings of Treadaway and, as such, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

B. 35 U.S.C. § 102 - Claims 2-4 and 7-8

First, claims 2-4 and 7-8 depend either directly or indirectly from independent claim 1 and recite further limitations thereof. At least because Treadaway does not anticipate Appellant's invention as recited in Appellant's independent claim 1, the Appellant further submits that dependent claims 2-4 and 7-8 are also not anticipated and are allowable for at least the reasons stated above with respect to independent claim 1.

That is, and for at least the same reasons provided in Section A above, the Appellant respectfully submits that Treadaway fails to teach, suggest or disclose at least "a plurality of data frames temporally separated by respective inter-packet gaps (IPGs), each IPG having positioned within it at least a synchronization pattern suitable for delineating a respective data frame" as taught in the Appellant's Specification and claimed by at least the Appellant's claim 1. Thus at least because Treadaway fails to anticipate the Appellant's claim 1, the Appellant further submits that Treadaway also fails to anticipate Appellant's invention as claimed in dependent claims 2-4 and 7-8, which depend either directly or indirectly from independent claim 1. Therefore, the Appellant submits that claims 2-4 and 7-8, as they now stand, fully satisfy the requirements of 35 U.S.C. § 102 and are patentable thereunder.

C. 35 U.S.C. § 102 - Claim 20.

Independent claim 20 is a method claim that recites limitations similar to those recited in independent claim 1. At least because Treadaway does not anticipate Appellant's invention as recited in Appellant's independent claim 1, the Appellant respectfully submits that independent method claim 20 is also not anticipated and is allowable for at least the reasons stated in Section A, above.

More specifically, claim 20 recites "determining data frame delineation points within a received data stream by detecting the presence of a synchronization pattern within said data stream, said synchronization pattern being positioned within inter-packet gaps (IPGs)". As such and for at least the reasons provided in Section A, the Appellant submits that Treadaway fails to anticipate the invention of the Appellant at least with respect to independent claim 20, which recites similar relevant features as recited in independent claim 1. Therefore, the Appellant submits that claim 20, as it now stands, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

II. THE EXAMINER ERRED IN REJECTING CLAIMS 5-6, 11-12, 14-19 AND 23 UNDER 35 U.S.C. § 103(a) BECAUSE THE CITED REFERENCES, ALONE OR IN ANY ALLOWABLE COMBINATION, FAIL TO TEACH, SHOW OR MAKE OBVIOUS AT LEAST A SYNCHRONIZATION PATTERN SUITABLE FOR DELINEATING A RESPECTIVE DATA FRAME POSITIONED WITHIN THE INTER-PACKET GAPS (IPGs) OF A PLURALITY OF TRANSMITTED DATA FRAMES.

A. 35 U.S.C. § 103 - Claims 5 and 23.

The Examiner rejected claims 5 and 23 under 35 U.S.C. § 103(a) as being unpatentable over Treadaway in view of Rouse (U.S. Patent 5,260,933). The rejection is respectfully traversed.

Claims 5 and 23 are dependent claims that depend directly from independent claims 1 and 20, respectively. Regarding claims 5 and 23, the Examiner alleges that Treadaway teaches all of the limitations of the Appellant's invention except that Treadaway fails to teach "CRC" for detecting errors data element generated and positioned within the data frame. As such, the Examiner cites Rouse for teaching "CRC" for detecting errors data element generated and positioned within the data frame. The Appellant respectfully disagrees.

The Examiner applied Treadaway for the rejection of claims 5 and 23 as applied above for the Examiner's rejection of claims 1 and 20. For at least the reasons recited above, the Appellant respectfully submits that the teachings of Treadaway, alone do not teach, suggest or disclose at least the Appellant's claims 1 and 20. More specifically, Treadaway does not teach, suggest or disclose "transmitting a plurality of data frames temporally separated by respective inter-packet gaps (IPGs), each IPG having positioned within it at least a synchronization pattern suitable for delineating a respective data frame" as taught by the Appellant's Specification and claimed in at least the Appellant's claim 1 and claim 20 as described in at least Section I.A above. That is, Treadaway does not teach or suggest the transmission of a synchronization pattern in inter-packet gaps of data packets such that the unique bit pattern will be detected by a receiver such

that packet delineation may be determined. As such, and for at least the reason that Treadaway does not teach, suggest or disclose the Appellant's claims 1 and 20, the Appellant further submits that Treadaway also does not teach, suggest or disclose the Appellant's claims 5 and 23, which depend directly from claims 1 and 20, respectively, and recite additional limitations therefor.

In addition, the Appellant respectfully submits that the teachings of Rouse alone, also do not teach, suggest or disclose the invention of the Appellant, at least with respect to independent claims 1 and 20 and dependent claims 5 and 23. More specifically, Rouse teaches a system and method for controlling the transmission of frames or packets of data in a serial network which allows out-of-order delivery. In Rouse, the data frames transmitted by an initiator node to the recipient node include frame serial number or sequence count information. However, there is absolutely no teaching, suggestion or disclosure in Rouse for "transmitting a plurality of data frames temporally separated by respective inter-packet gaps (IPGs), each IPG having positioned within it at least a synchronization pattern suitable for delineating a respective data frame" as taught by the Appellant's Specification and claimed in at least the Appellant's claim 1 and claim 20. That is, Rouse does not teach or suggest the transmission of a synchronization pattern in inter-packet gaps of data packets such that the unique bit pattern will be detected by a receiver such that packet delineation may be determined. As such, and for at least the reason that Rouse does not teach, suggest or disclose the Appellant's claims 1 and 20, the Appellant further submits that Rouse also does not teach, suggest or disclose the Appellant's claims 5 and 23, which depend from claims 1 and 20, respectively, and recite additional limitations therefor.

Furthermore, the Appellant submits that there is absolutely no motivation or suggestion in either reference for the combination of Treadaway and Rouse to attempt to teach the invention of the Appellant. More specifically, there is obviously no motivation or suggestion in Treadaway for the combination of the references. Likewise, Rouse does not expressly or impliedly motivate or suggest such a combination.

For prior art reference to be combined to render obvious a subsequent invention under 35 U.S.C. § 103, there must be something in the prior art as a whole which suggests the desirability, and thus the obviousness, of making the combination. Uniroyal v. Rudkin-Wiley, 5 U.S.P.SQ.2d 1434, 1438 (Fed. Cir. 1988). The teachings of the references can be combined only if there is some suggestion or incentive in the prior art to do so. In re Fine, 5 U.S.P.SQ.2d 1596, 1599 (Fed. Cir. 1988). ***Hindsight is strictly forbidden. It is impermissible to use the claims as a framework to pick and choose among individual references to recreate the claimed invention*** Id. at 1600; W.L. Gore Associates, Inc., v. Garlock, Inc., 220 U.S.P.Q. 303, 312 (Fed. Cir. 1983). (emphasis added).

Moreover, the mere fact that a prior art structure could be modified to produce the claimed invention would not have made the modification obvious unless the prior art suggested the desirability of the modification. In re Fritch, 23 U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992); In re Gordon, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984).

The Appellant further submits that even if there was a motivation or suggestion to combine (which the Appellant maintains that there is not), the teachings of Treadawya and Rouse, in any allowable combination, fail to teach, suggest or make obvious the Appellant's invention, at least with regard to independent claims 1 and 20 and in addition, with respect to claims 5 and 23, which depend directly from claims 1 and 20 and recited additional limitations therefor. More specifically, the teachings of Treadaway and Rouse fail to teach, suggest or make obvious "transmitting a plurality of data frames temporally separated by respective inter-packet gaps (IPGs), each IPG having positioned within it at least a synchronization pattern suitable for delineating a respective data frame" as taught by the Appellant's Specification and claimed in at least the Appellant's claim 1 and claim 20. That is, any allowable combination of Treadaway and Rouse does not teach or suggest the transmission of a synchronization pattern in inter-packet gaps of data packets such that the unique bit pattern will be detected by a receiver such that packet delineation may be determined.

As such and for at least the reasons described above, the Appellant respectfully submits that neither the Ethernet switch taught in Treadaway nor the acknowledgment protocol taught in Rouse, alone or in any allowable combination, renders obvious the "transmitting a plurality of data frames temporally separated by respective inter-packet gaps (IPGs), each IPG having positioned within it at least a synchronization pattern suitable for delineating a respective data frame" as taught by the Appellant's Specification and claimed in at least the Appellant's claim 1 and claim 20. As such and for at least the reason that Treadaway and Rouse, alone or in any allowable combination, fail to teach or suggest the invention of the Appellant with regard to claims 1 and 20, the Appellant further submits that the teachings of Treadaway and Rouse, alone or in any allowable combination, also fail to teach or suggest the invention of the Appellant with regard to claims 5 and 23, which depend directly from claims 1 and 20, respectively.

Therefore and for at least the reasons recited above, the Appellant respectfully submits that claims 5 and 23, as they now stands, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

B. 35 U.S.C. § 103 - Claim 6

The Examiner rejected claim 6 under 35 U.S.C. § 103(a) as being unpatentable over Treadaway in view of Rouse (U.S. Patent 5,260,933). The rejection is respectfully traversed.

Claim 6 is a dependent claim that depends indirectly from the Appellant's claim 1 and directly from the Appellant's claim 5. The Examiner applied Treadaway to claim 6 as described above for the Examiner's rejection of the Appellant's claims 1 and 5. The Appellant respectfully disagrees.

As described above with regard to the Examiner's rejection of claims 1 and 5, the teachings of Treadaway do not teach, suggest or make obvious the Appellant's invention with regard to at least claims 1 and 5. As such, and at least for the reasons set forth above indicating that Treadaway does not teach suggest, or describe the Appellant's invention with regard to claims 1 and 5, the Appellant respectfully submits that dependent claim 6, which depends indirectly from

independent claim 1 and directly from claim 5, is also not taught or rendered obvious by Treadaway.

Even further, the Appellant submits that the teachings of Rouse alone also do not teach the invention of the Appellant at least with regard to claims 1, 5 and 6. As described above, Rouse teaches a system and method for controlling the transmission of frames or packets of data in a serial network which allows out-of-order delivery. In Rouse, the data frames transmitted by an initiator node to the recipient node include frame serial number or sequence count information. However, there is absolutely no teaching, suggestion or disclosure in Rouse for "transmitting a plurality of data frames temporally separated by respective inter-packet gaps (IPGs), each IPG having positioned within it at least a synchronization pattern suitable for delineating a respective data frame" as taught by the Appellant's Specification and claimed in at least the Appellant's claim 1 and claim 5. That is, Rouse does not teach or suggest the transmission of a synchronization pattern in inter-packet gaps of data packets such that the unique bit pattern will be detected by a receiver such that packet delineation may be determined. As such, and for at least the reason that Rouse does not teach, suggest or disclose the Appellant's claims 1 and 5, the Appellant further submits that Rouse also does not teach, suggest or disclose the Appellant's claim 6, which depends indirectly from claim 1 and directly from claim 5, and recites additional limitations therefor.

Furthermore, the Appellant submits that there is no suggestion or motivation to combine the teachings of Treadaway and Rouse. Moreover, the Appellant submits that even if there was a motivation or suggestion to combine the references (which the Appellant believes that there is none), the teachings of Treadaway and Rouse, either alone or in any allowable combination, fail to teach the invention of the Appellant at least with respect to claims 1 and 5. Even further, the Appellant submits that the teachings of Rouse fail to bridge the substantial gap between the Appellant's invention, and the teachings of Treadaway. More specifically, and as discussed and proven above, Treadaway fails to teach at least "transmitting a plurality of data frames temporally separated by respective inter-packet gaps (IPGs), each IPG having positioned within it at least a synchronization

pattern suitable for delineating a respective data frame" as taught and claimed in at least the Appellant's claims 1 and 5. Furthermore, the Appellant submits that the teachings of Rouse do not bridge the gap between the teachings of Treadaway and the Appellant's invention at least with respect to the Appellant's claims 1 and 5. As such and at least because the teachings of Treadaway and Rouse, alone or in any allowable combination, fail to teach, suggest or disclose the Appellant's claims 1 and 5, the Appellant further submits that the teachings of Treadaway and Rouse, alone or in any allowable combination, also fail to teach, suggest or disclose the Appellant's invention with respect to claim 6, which depends indirectly from the Appellant's claims 1 and directly from the Appellant's claim 5. As such, the Appellant respectfully submits that claim 6 is also not rendered obvious by the teachings of Treadaway and Rouse, alone or in any allowable combination, for at least the reasons described above.

Therefore and for at least the reasons recited above, the Appellant respectfully submits that claim 6, as it now stands, fully satisfies the requirements of 35 U.S.C. § 103 and is patentable thereunder.

C. 35 U.S.C. § 103 - Claims 11-12 and 14

The Examiner rejected claims 11-12 and 14 under 35 U.S.C. § 103(a) as being unpatentable over Treadaway in view of Rouse (U.S. Patent 5,260,933). The rejection is respectfully traversed.

Claims 11-12 and 14 are dependent claims that depend either directly or indirectly from the Appellant's claim 10. The Examiner applied Treadaway to the rejection of claims 11-12 and 14 as described above for the Examiner's rejection of the Appellant's claim 1. The Appellant respectfully disagrees.

As described above with regard to the Examiner's rejection of claim, the teachings of Treadaway do not teach suggest, or describe the Appellant's invention with regard to at least claim 1. As such, and at least for the reasons set forth above indicating that Treadaway does not teach suggest, or describe the Appellant's invention with regard to claim 1, the Appellant respectfully submits that Treadaway also fails to teach, suggest or make obvious the Appellant's

independent claim 10, which recites similar relevant features as recited in the Appellant's claim 1. More specifically, the Appellant's claim 10 specifically recites "inserting, into a temporal region following each transmitted data frame, a synchronization pattern suitable for delineating said data frame." For at least the reasons described above with respect to the Appellant's independent claim 1, the Appellant further submits that the teachings of Treadaway also fail to teach, suggest or make obvious the Appellant's claim 10.

As such, the Appellant submits that dependent claims 11-12 and 14, which depend directly and indirectly, respectively, from independent claim 10 and recite additional limitations thereof, are also not taught or rendered obvious by Treadaway.

Even further, the Appellant submits that the teachings of Rouse alone also do not teach the invention of the Appellant at least with regard to claims 1, 10 and 11-12 and 14. As described above, Rouse teaches a system and method for controlling the transmission of frames or packets of data in a serial network which allows out-of-order delivery. In Rouse, the data frames transmitted by an initiator node to the recipient node include frame serial number or sequence count information. However, there is absolutely no teaching, suggestion or disclosure in Rouse for "inserting, into a temporal region following each transmitted data frame, a synchronization pattern suitable for delineating said data frame" as taught by the Appellant's Specification and claimed in at least the Appellant's claim 1 and claim 10. That is, Rouse does not teach or suggest the transmission of a synchronization pattern in inter-packet gaps of data packets such that the unique bit pattern will be detected by a receiver such that packet delineation may be determined. As such, and for at least the reason that Rouse does not teach, suggest or disclose the Appellant's claims 1 and 10, the Appellant further submits that Rouse also does not teach, suggest or disclose the Appellant's claims 11-12 and 14, which depend directly and indirectly, respectively, from claim 10 and recite additional limitations therefor.

As such, and at least because Rouse does not teach, suggest or make obvious the Appellant's claims 1 and 10, the Appellant further submits that Rouse

also does not teach, suggest or disclose the Appellant's claims 11-12 and 14, which depend directly and indirectly from claim 10.

Furthermore, the Appellant submits that there is no suggestion or motivation to combine the teachings of Treadaway and Rouse. Moreover, the Appellant submits that even if there was a motivation or suggestion to combine the references (which the Appellant believes that there is none), the teachings of Treadaway and Rouse, either alone or in any allowable combination, fail to teach the invention of the Appellant at least with respect to claims 1 and 10. Even further, the Appellant submits that the teachings of Rouse fail to bridge the substantial gap between the Appellant's invention, and the teachings of Treadaway. More specifically, and as discussed and proven above, Treadaway fails to teach at least ""inserting, into a temporal region following each transmitted data frame, a synchronization pattern suitable for delineating said data frame" as taught and claimed in at least the Appellant's claims 1 and 10. Furthermore, the Appellant submits that the teachings of Rouse do not bridge the gap between the teachings of Treadaway and the Appellant's invention at least with respect to the Appellant's claims 1 and 10. As such and at least because the teachings of Treadaway and Rouse, alone or in any allowable combination, fail to teach, suggest or disclose the Appellant's claims 1 and 10, the Appellant further submits that the teachings of Treadaway and Rouse, alone or in any allowable combination, also fail to teach, suggest or disclose the Appellant's invention with respect to claims 11-12 and 14. As such, the Appellant respectfully submits that claims 11-12 and 14 are also not rendered obvious by the teachings of Treadaway and Rouse, alone or in any allowable combination, for at least the reasons described above.

Therefore and for at least the reasons recited above, the Appellant respectfully submits that claims 11-12 and 14, as they now stand, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

D. 35 U.S.C. § 102 - Claim 15.

Independent claim 15 is a method claim that recites limitations similar to those recited in independent claim 1. At least because Treadaway does not anticipate Appellant's invention as recited in Appellant's independent claim 1, the Appellant respectfully submits that independent method claim 15 is also not anticipated and is allowable for at least the reasons stated in Section I.A, above. More specifically, claim 15 recites "transmitting, upon the transmission of said entire data frame, an end of frame delineator (EFD) and a termination flag (T-FLAG), said T-FLAG comprising a respective relatively long synchronization pattern suitable for delineating said data frame." As such and for at least the reasons provided in Section A, the Appellant submits that Treadaway fails to teach, suggest or make obvious the invention of the Appellant at least with respect to independent claim 1 and as such also fails to teach, suggest or make obvious the Appellant's claim 15, which recites similar relevant features as independent claim 1.

Even further, the Appellant submits that the teachings of Rouse alone also do not teach the invention of the Appellant at least with regard to claim 15. As described above, Rouse teaches a system and method for controlling the transmission of frames or packets of data in a serial network which allows out-of-order delivery. In Rouse, the data frames transmitted by an initiator node to the recipient node include frame serial number or sequence count information. However, there is absolutely no teaching, suggestion or disclosure in Rouse for "transmitting, upon the transmission of said entire data frame, an end of frame delineator (EFD) and a termination flag (T-FLAG), said T-FLAG comprising a respective relatively long synchronization pattern suitable for delineating said data frame" as taught by the Appellant's Specification and claimed in at least the Appellant's claim 15. That is, Rouse does not teach or suggest the transmission of a synchronization pattern such that the unique bit pattern will be detected by a receiver such that packet delineation may be determined. As such, and for at least the reason that Rouse does not teach, suggest or disclose the Appellant's claim 1, the Appellant further submits that Rouse also does not teach, suggest or make

obvious the Appellant's claim 15, which recites similar relevant features as independent claim 1.

Furthermore, the Appellant submits that there is no suggestion or motivation to combine the teachings of Treadaway and Rouse. Moreover, the Appellant submits that even if there was a motivation or suggestion to combine the references (which the Appellant believes that there is none), the teachings of Treadaway and Rouse, either alone or in any allowable combination, fail to teach the invention of the Appellant at least with respect to claims 1 and 15. Even further, the Appellant submits that the teachings of Rouse fail to bridge the substantial gap between the Appellant's invention, and the teachings of Treadaway. More specifically, and as discussed and proven above, Treadaway fails to teach at least "transmitting, upon the transmission of said entire data frame, an end of frame delineator (EFD) and a termination flag (T-FLAG), said T-FLAG comprising a respective relatively long synchronization pattern suitable for delineating said data frame" as taught and claimed in at least the Appellant's claims 1 and 15. Furthermore, the Appellant submits that the teachings of Rouse do not bridge the gap between the teachings of Treadaway and the Appellant's invention at least with respect to the Appellant's claims 1 and 15.

Therefore and for at least the reasons described above with reference to the Appellant's claim 1, the Appellant further submits that independent claim 15 is also not taught, suggested or made obvious by the teachings of Treadaway and Rouse, alone or any allowable combination, and fully satisfies the requirements of 35 U.S.C. § 103 and is patentable thereunder.

E. 35 U.S.C. § 103 - Claims 16-19

The Examiner rejected claims 16-19 under 35 U.S.C. § 103(a) as being unpatentable over Treadaway in view of Rouse (U.S. Patent 5,260,933). The rejection is respectfully traversed.

Claims 16-19 are dependent claims that depend either directly or indirectly from the Appellant's claim 15. The Examiner applied Treadaway and Rouse to the

rejection of claims 16-19 as described above for the Examiner's rejection of the Appellant's claim 1. The Appellant respectfully disagrees.

As described above with regard to the Examiner's rejection of claim 15, the teachings of Treadaway and Rouse do not teach suggest, or describe the Appellant's invention with regard to at least claim 15. As such, and at least for the reasons set forth above indicating that Treadaway and Rouse, alone or in any allowable combination, do not teach suggest, or make obvious the Appellant's invention with regard to claim 15, the Appellant respectfully submits that Treadaway and Rouse, alone or in any allowable combination, also fail to teach, suggest or make obvious the Appellant's claims 16-19, which depend either directly or indirectly from the Appellant's claim 15. More specifically, Treadaway and Rouse, alone or in any allowable combination, fail to teach, suggest or make obvious at least "transmitting, upon the transmission of said entire data frame, an end of frame delineator (EFD) and a termination flag (T-FLAG), said T-FLAG comprising a respective relatively long synchronization pattern suitable for delineating said data frame" as taught and claimed in at least the Appellant's claim 15.

As such and at least because the teachings of Treadaway and Rouse, alone or in any allowable combination, do not teach suggest, or make obvious the Appellant's invention with regard to claim 15, the Appellant respectfully submits that Treadaway and Rouse, alone or in any allowable combination, also fail to teach, suggest or make obvious the Appellant's claims 16-19, which depend either directly or indirectly from the Appellant's claim 15.

Therefore and for at least the reasons recited above, the Appellant respectfully submits that claims 16-19, as they now stand, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

B. 35 U.S.C. § 103 - Claim 23

The Examiner rejected claim 23 under 35 U.S.C. § 103(a) as being unpatentable over Treadaway in view of Rouse (U.S. Patent 5,260,933). The rejection is respectfully traversed.

Claim 23 is a dependent claim that depends directly from the Appellant's claim 20. The Examiner applied Treadaway to claim 23 as described above for the Examiner's rejection of the Appellant's claims 23. The Appellant respectfully disagrees.

As described above with regard to the Examiner's rejection of claim 20, the teachings of Treadaway do not teach suggest, or describe the Appellant's invention with regard to at least claim 20. As such, and at least for the reasons set forth above indicating that Treadaway does not teach suggest, or describe the Appellant's invention with regard to claim 20, the Appellant respectfully submits that dependent claim 23, which depends directly from independent claim 20 is also not taught or rendered obvious by Treadaway.

Even further, the Appellant submits that the teachings of Rouse alone also do not teach the invention of the Appellant at least with regard to claim 20. As described above, Rouse teaches a system and method for controlling the transmission of frames or packets of data in a serial network which allows out-of-order delivery. In Rouse, the data frames transmitted by an initiator node to the recipient node include frame serial number or sequence count information. However, there is absolutely no teaching, suggestion or disclosure in Rouse for "determining data frame delineation points within a received data stream by detecting the presence of a synchronization pattern within said data stream, said synchronization pattern being positioned within inter-packet gaps (IPGs)" as taught by the Appellant's Specification and claimed in at least the Appellant's claim 20. That is, Rouse does not teach or suggest the transmission of a synchronization pattern in inter-packet gaps of data packets such that the unique bit pattern will be detected by a receiver such that packet delineation may be determined. As such, and for at least the reason that Rouse does not teach, suggest or disclose the Appellant's claim 20, the Appellant further submits that Rouse also does not teach, suggest or disclose the Appellant's claim 23, which depends indirectly from claim 1 and recites additional limitations therefor.

Furthermore, the Appellant submits that there is no suggestion or motivation to combine the teachings of Treadaway and Rouse. Moreover, the Appellant

submits that even if there was a motivation or suggestion to combine the references (which the Appellant believes that there is none), the teachings of Treadaway and Rouse, either alone or in any allowable combination, fail to teach the invention of the Appellant at least with respect to claim 20. Even further, the Appellant submits that the teachings of Rouse fail to bridge the substantial gap between the Appellant's invention, and the teachings of Treadaway. More specifically, and as discussed and proven above, Treadaway fails to teach at least "determining data frame delineation points within a received data stream by detecting the presence of a synchronization pattern within said data stream, said synchronization pattern being positioned within inter-packet gaps (IPGs)" as taught and claimed in at least the Appellant's claim 20. Furthermore, the Appellant submits that the teachings of Rouse do not bridge the gap between the teachings of Treadaway and the Appellant's invention at least with respect to the Appellant's claim 20. As such and at least because the teachings of Treadaway and Rouse, alone or in any allowable combination, fail to teach, suggest or disclose the Appellant's claim 20, the Appellant further submits that the teachings of Treadaway and Rouse, alone or in any allowable combination, also fail to teach, suggest or disclose the Appellant's invention with respect to claim 23, which depends directly from the Appellant's claim 1. As such, the Appellant respectfully submits that claim 23 is also not rendered obvious by the teachings of Treadaway and Rouse, alone or in any allowable combination, for at least the reasons described above.

Therefore and for at least the reasons recited above, the Appellant respectfully submits that claim 23, as it now stands, fully satisfies the requirements of 35 U.S.C. § 103 and is patentable thereunder.

III. THE EXAMINER ERRED IN REJECTING CLAIMS 9, 10, 13 AND 24-26 UNDER 35 U.S.C. § 103(a) BECAUSE THE CITED REFERENCE FAILS TO TEACH, SHOW OR MAKE OBVIOUS AT LEAST A SYNCHRONIZATION PATTERN SUITABLE FOR DELINEATING A RESPECTIVE DATA FRAME POSITIONED WITHIN THE INTER-PACKET GAPS (IPGs) OF A PLURALITY OF TRANSMITTED DATA FRAMES.

A. 35 U.S.C. § 103 - Claim 9

The Examiner rejected claim 9 under 35 U.S.C. § 103(a) as being unpatentable over Treadaway. The rejection is respectfully traversed.

Claim 9 depends directly from independent claim 1 and recites further limitations thereof. The Appellant respectfully submits that at least because Treadaway does not teach, suggest or make obvious the Appellant's invention as recited in Appellant's independent claim 1, dependent claim 9 is also not taught, suggested or made obvious by Treadaway and is patentable for at least the reasons stated above with respect to independent claim 1.

That is, for at least the same reasons provided in Section I.A above, the Appellant submits that Treadaway fails to teach, suggest or make obvious at least "a plurality of data frames temporally separated by respective inter-packet gaps (IPGs), each IPG having positioned within it at least a synchronization pattern suitable for delineating a respective data frame" as taught in the Appellant's Specification and claimed by at least the Appellant's claim 1. Thus at least because Treadaway fails to teach, suggest or make obvious the Appellant's independent claim 1, the Appellant respectfully submits that Treadaway also fails to teach, suggest or make obvious the Appellant's dependent claim 9, which depends directly from independent claim 1.

Therefore, the Appellant submits that claim 9, as it now stands, fully satisfies the requirements of 35 U.S.C. § 103 and is patentable thereunder.

B. 35 U.S.C. § 103 - Claim 10.

Independent claim 10 is a protocol claim that recites limitations similar to those recited in independent claim 1. At least because Treadaway does not teach, suggest or make obvious Appellant's invention as recited in Appellant's independent claim 1, the Appellant respectfully submits that independent claim 10 is also not taught, suggested or made obvious by Treadaway and is patentable for at least the reasons stated in Section I.A, above.

More specifically, claim 10 recites "inserting, into a temporal region following each transmitted data frame, a synchronization pattern suitable for delineating said data frame." As such and for at least the same reasons provided in Section I.A with respect to the Appellant's independent claim 1, the Appellant further submits that Treadaway fails to teach, suggest or make obvious the invention of the Appellant at least with respect to independent claim 10, which recites similar relevant features as independent claim 1.

Therefore, the Appellant submits that claim 10, as it now stands, fully satisfies the requirements of 35 U.S.C. § 103 and is patentable thereunder.

C. 35 U.S.C. § 103 - Claim 13

The Examiner rejected claim 13 under 35 U.S.C. § 103(a) as being unpatentable over Treadaway. The rejection is respectfully traversed.

Claim 13 depends directly from independent claim 10 and recites further limitations thereof. The Appellant respectfully submits that at least because Treadaway does not teach, suggest or make obvious the Appellant's independent claim 10, the Appellant further submits that dependent claim 13 is also not taught, suggested or made obvious by Treadaway and is patentable for at least the reasons stated above with respect to independent claim 10.

That is, for at least the same reasons provided in Section I.A above with respect to the Appellant's independent claim 1 and, as such, the Appellant's independent claim 10, the Appellant further submits that Treadaway fails to teach, suggest or make obvious at least "inserting, into a temporal region following each transmitted data frame, a synchronization pattern suitable for delineating said data frame" as taught in the Appellant's Specification and claimed by at least the

Appellant's claim 10. Thus at least because Treadaway fails to teach, suggest or make obvious the Appellant's independent claims 1 and 10, the Appellant respectfully submits that Treadaway also fails to teach, suggest or make obvious Appellant's dependent claim 13, which depends directly from independent claim 10.

Therefore, the Appellant submits that claim 13, as it now stands, fully satisfies the requirements of 35 U.S.C. § 103 and is patentable thereunder.

D. 35 U.S.C. § 103 - Claims 24-26

The Examiner rejected claims 24-26 under 35 U.S.C. § 103(a) as being unpatentable over Treadaway. The rejection is respectfully traversed.

Claims 24-26 depend directly from independent claim 20 and recite further limitations thereof. At least because Treadaway does not teach, suggest or make obvious the Appellant's independent claim 20, the Appellant further submits that dependent claims 24-26 are also not taught, suggested or made obvious by Treadaway and are patentable for at least the reasons stated above with respect to independent claim 20.

That is, for at least the same reasons provided in Section I.A above with respect to independent claims 1 and 20, the Appellant submits that Treadaway fails to teach, suggest or make obvious at least "determining data frame delineation points within a received data stream by detecting the presence of a synchronization pattern within said data stream, said synchronization pattern being positioned within inter-packet gaps (IPGs)" as taught in the Appellant's Specification and claimed by at least the Appellant's claim 20. Thus at least because Treadaway fails to teach, suggest or make obvious the Appellant's independent claim 20, the Appellant further submits that Treadaway also fails to teach, suggest or make obvious the Appellant's dependent claims 24-26, which depend directly from independent claim 20.

Therefore, the Appellant submits that claims 24-26, as they now stand, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

Conclusion

Thus, the Appellant submits that none of the claims presently in the application are anticipated under the provisions of 35 U.S.C. § 102 or obvious under the provision of 35 U.S.C. § 103. Consequently, the Appellant believes all these claims are presently in condition for allowance. The Appellant does however agree with the Examiner that claims 21 and 22 are allowable if written in independent form including all of the limitations of the base claims and any intervening claims, however, the Appellant respectfully submits that all of the claims are presently patentable over the cited prior art.

For the reasons advanced above, the Appellant respectfully urges that the rejections of claims 1-4, 7-8 and 20 as being unpatentable under 35 U.S.C. §102 and the rejections of claims 5, 6, 9-11, 12-19 and 23-26 as being obvious under 35 U.S.C. §103 are improper. Reversal of the rejections in this Appeal is respectfully requested.

Respectfully submitted,

22 nov 04
Date

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CLAIMS APPENDIX

1. (Previously Presented) A method of data communication, comprising:

transmitting a plurality of data frames temporally separated by respective inter-packet gaps (IPGs), each IPG having positioned within it at least a synchronization pattern suitable for delineating a respective data frame.

2. (Previously Presented) The method of claim 1, wherein a length indicative data element is positioned within said IPG, each length indicative data element storing a length parameter associated with a data frame adjacent said IPG.

3. (Previously Presented) The method of claim 2, wherein said length indicative data element comprises a count of a number of double words within said adjacent data frame.

4. (Previously Presented) The method of claim 2, wherein said length indicative data element comprises a count of a number of words within said adjacent data frame.

5. (Previously Presented) The method of claim 1, wherein a cyclical redundancy check (CRC) data element is positioned within each IPG, said CRC data element storing a CRC generated using a data frame adjacent said IPG.

6. (Previously Presented) The method of claim 5, wherein said adjacent data frame is scrambled using a polynomial which is relatively prime with a CRC generator polynomial used to generate said respective CRC indicative data element.

7. (Previously Presented) The method of claim 1, wherein said data frame is scrambled using a polynomial.

8. (Previously Presented) The method of claim 7, wherein said scrambled data frame and the contents of said adjacent IPG are scrambled.

9. (Previously Presented) The method of claim 1, wherein a pointer data element is positioned within said IPG, said pointer data element indicating the position of a next data frame.

10. (Original) A protocol suitable for delineating data frames within a communications link, said protocol comprising a plurality of layers including a physical coding sublayer (PCS), said PCS processing a data to be transmitted as a sequence of data frames, said protocol comprising:

receiving a data stream to be transmitted as a sequence of data frames;

inserting, into a temporal region following each transmitted data frame, a synchronization pattern suitable for delineating said data frame.

11. (Original) The protocol of claim 10, further comprising:

inserting, into said temporal region following each transmitted data frame, a cyclical redundancy check (CRC) data element generated using the contents of said data frame.

12. (Original) The protocol of claim 11, further comprising:

inserting, into said temporal region following each transmitted data frame, a length indicative data element generated according to the contents of a respective data frame.

13. (Original) The protocol of claim 10, further comprising:

scrambling said received data included within said sequence of data frames; and

determining whether said scrambled data include a data pattern that may be interpreted as being equivalent to said synchronization pattern; and

in the case of finding such a matching data pattern, inserting an error message into said data frame being formed.

14. (Original) The protocol of claim 13, wherein said scrambling is performed using a polynomial which is relatively prime with a CRC generator polynomial used to generate a CRC indicative data element, said CRC indicative data element being inserted into a temporal region following said data frame from which said CRC was generated.

15. (Previously Presented) A method for transmitting data, comprising:

transmitting, to a physical media dependent (PMD) layer, a sequence of idle control characters;

transmitting, to said PMD layer, a start of frame delineator (SFD) upon detecting the presence of data to be transmitted;

transmitting said received data until an entire data frame has been transmitted;

transmitting, upon the transmission of said entire data frame, an end of frame delineator (EFD) and a termination flag (T-FLAG), said T-FLAG comprising a respective relatively long synchronization pattern suitable for delineating said data frame.

16. (Original) The method of claim 15, further comprising:

scrambling said data forming said data frame.

17. (Original) The method of claim 16, further comprising:

scrambling said scrambled data, said SFD, said EFD and said T-FLAG.

18. (Original) The method of claim 15, further comprising:

transmitting, to said PMD layer, an error flag (E-FLAG) upon detecting an arrangement of data within said data frame substantially equivalent to said T-FLAG synchronization pattern.

19. (Original) The method of claim 15, further comprising the step of:

transmitting, upon the transmission of said entire data frame, a pointer indicative of the position of a next data frame to be transmitted.

20. (Original) A method for receiving data, comprising:

determining data frame delineation points within a received data stream by detecting the presence of a synchronization pattern within said data stream, said synchronization pattern being positioned within inter-packet gaps (IPGs); and

forming data frames for subsequent processing by utilizing said determined delineation points.

21. (Original) The method of claim 20, wherein said detection of said synchronization pattern comprises a correlation of data within said data stream to at least an n-bit difference between said synchronization pattern and said reference synchronization pattern.

22. (Original) The method of claim 21, further comprising:

discarding all data pertaining to a data frame being formed in response to the detection of an error flag within said input data stream.

23. (Original) The method of claim 20, further comprising:

identifying a cyclical redundancy check (CRC) data element proximate said T-FLAG and within a respective IPG; and

utilizing said detected CRC and a CRC generated using a corresponding formed data frame to determine whether said formed data frame has been corrupted.

24. (Original) The method of claim 20, further comprising:

detecting a length indicative data element proximate said T-FLAG and within a respective IPG; and

determining whether said received data frame has a length proximate the length indicated by said length detected length indicative data element.

25. (Original) The method of claim 20, further comprising:

detecting a pointer within said data stream proximate said T-FLAG, said pointer identifying a start position of a next data frame; and

determining whether a gap within said data stream exists indicative of the corruption of a T-FLAG prior to the reception of said data stream.

26. (Original) The method of claim 20, wherein said data stream is received from a physical media dependent (PMD) layer and said formed data frames are provided to a media access control (MAC) interface layer.